National Smart Tools and Smart Initializations Team Briefing

November 16, 2004

David Novak (Team Lead)

Eastern Region SSD

Introduction

- Team Background
- Current Activities
- Future Activities
- Challenges

Background

STSIT Team Members

ER – Dave Novak (ER-SSD) (Team Leader)

OCWWS – Brian Motta (IFPS Training Team) (Facilitator)

PR – Bill Ward (PRHQ/ ISST)

CR – Gino Izzi (WFO Springfield, MO)

ER – Carl Morgan (WFO Wilmington, NC)

WR – Jim Fischer (Reno, NV)

WR – Carl Gorski (WRHQ)

SR – Brian D. Smith (Little Rock, AR)

AR – Jay Smith (WFO Fairbanks, AK)

NWSTC – Sam Beckman

FSL – Tom LeFebvre

COMET – Stephen Jascourt (NWP PDS team)

MDL- Joe Maloney

Background

Roles and Responsibilities

- Collect and take ownership of Smart Tools and Smart Initialization Techniques issues, including tool development, verification, use, and training

- Develop process to assure scientific and technical validity of Smart Tools and Initializations

- Recommend tools and techniques for inclusion into the GFE baseline

http://www-md.fsl.noaa.gov/IFPS/nsit/NatSTSITeam.html

Current Activities

Support DSPO Activities

NDFD IOC Quality Assurance Report

- -Are there tools to assure:
  - »Internal Grid Consistency
  - »Border Consistency
  - »Policy Consistency

Establish National Recommended Smart Tool List

List to contain the most operationally relevant, scientifically sound Smart Tools in use across the NWS

NDFD IOC Quality Assurance

Element	Meteorological/ Policy Checks	Tools Available
MaxT	See T	ER_QCCheck
MinT	See T	ER_QCCheck
T	MinT <= T <= MaxT	ER_QCCheck
Td	Td <= T	TdSmartTool, ER_QCCheck
PoP12	Floating PoP values agree with Weather string (can't have rain likely and 20% floating PoP)	ER_QCCheck
Weather	Freezing (liquid) precip where T is <=32 (>= 32)	ER_QCCheck (with modifications)
Sky Cover	Relation to Wx, PoP, QPF, SnowAmt undetermined.	**NO**
Wind	No check needed	--------
QPF	Nonzero QPF where PoP >=15%	ER_QCCheck (with modifications)
SnowAmt	No check needed	---------
Wave Height	No check needed	---------
NDFD Timeliness	Are all "Day 7" grids there	ER_NDFDGridCheck

Recommendations

Meteorological and Policy Checks

•The noted Meteorological and Policy Checks should be incorporated into the baseline GFE software to assure internal grid consistency. The ER_QCCheck Smart Tool is recommended as a starting point for development.

WFO Border Checks (short term)

•MDL and FSL should collaborate on common NDFD consistency algorithms and implement the result in the baseline GFE ISC Discrepancy tools provided to forecasters.

WFO Border Checks (long term)

•Allocate resources to establish robust gridded verification of forecast grids, Smart Tools, and Smart Initializations.

Status

Meteorological and Policy Checks

•STSIT Tasked by DSPO to develop/identify tool to complete temperature consistency checks. Limited FSL development resources prohibit baselining tool. Tool to be distributed nationally via the Smart Tool Repository.

WFO Border Checks (short term)

•Action added to FSL task list (over 180 items). Unknown implementation due to limited development resources and VTEC priorities - possibly implemented in IFPS 16.3.

WFO Border Checks (long term)

•ISST verification efforts

National Recommended Tools

- Inspired from success of ER recommended Smart Tools List

- List to contain the most operationally relevant, scientifically sound Smart Tools in use across the NWS

- Expected to help focus training and development resources

National Recommended Tools

- Team analysis of results based on:

  -Scientific Integrity- Is the tool methodology consistent with meteorological theory and principles?

  -Subjective Verification-are there any obvious biases or errors when the tool's results are compared to observations?

  -Usability/Popularity-Is the tool easy to set up and easy for forecasters to use?

  -Hardware Performance- For a baseline GFE system (e.g., 5 km resolution), how long does the tool take to run and are there any GFE crashes?

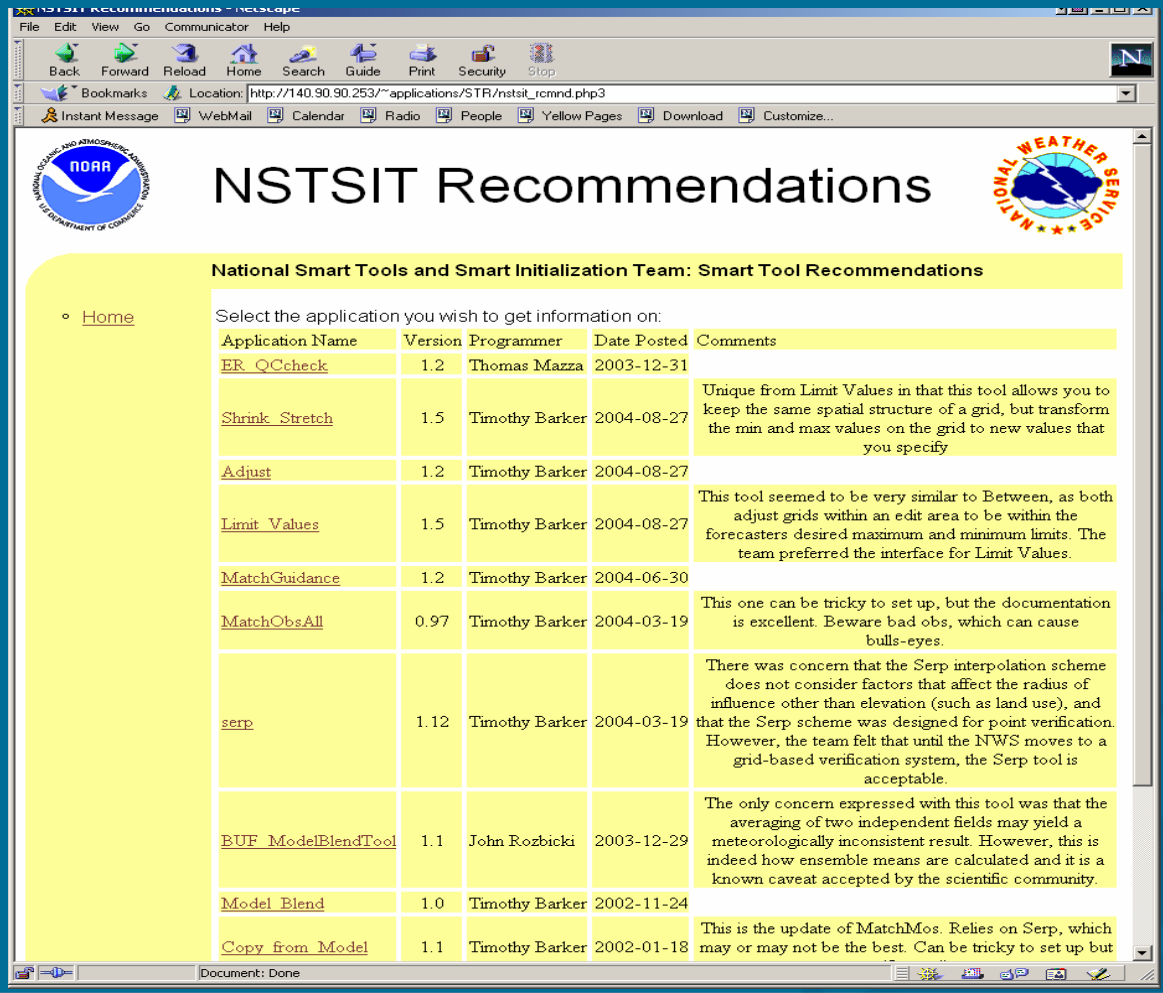
  -Documentation- Does the tool have documentation which conforms to the National Smart Tool Repository documentation guidelines ?

National Recommended Tools

- 132 Smart Tools/Inits nominated across the NWS
  - -Phased Analysis Approach:
    - »Phase 1: QC, Grid Population, and Manipulation tools (i.e., not element-specific)
    - »Phase 2: NDFD IOC element specific grid editing tools (i.e., Temperature, Dewpoint, Wind, Wave Height)
    - »Phase 3: Remaining Tools/Inits (i.e., Wind Gust, Visibility, Mixing Height)

Status

- Phase I complete



File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Location: http://140.90.90.253/~applications/STR/nstsit_rcmnd.php3

Instant Message WebMail Calendar Radio People Yellow Pages Download Customize...

NSTSIT Recommendations

National Smart Tools and Smart Initialization Team: Smart Tool Recommendations

- Home

Select the application you wish to get information on:

Application Name	Version	Programmer	Date Posted	Comments
ER_QCcheck	1.2	Thomas Mazza	2003-12-31	
Shrink_Stretch	1.5	Timothy Barker	2004-08-27	Unique from Limit Values in that this tool allows you to keep the same spatial structure of a grid, but transform the min and max values on the grid to new values that you specify
Adjust	1.2	Timothy Barker	2004-08-27	
Limit_Values	1.5	Timothy Barker	2004-08-27	This tool seemed to be very similar to Between, as both adjust grids within an edit area to be within the forecasters desired maximum and minimum limits. The team preferred the interface for Limit Values.
MatchGuidance	1.2	Timothy Barker	2004-06-30	
MatchObsAll	0.97	Timothy Barker	2004-03-19	This one can be tricky to set up, but the documentation is excellent. Beware bad obs, which can cause bulls-eyes.
serp	1.12	Timothy Barker	2004-03-19	There was concern that the Serp interpolation scheme does not consider factors that affect the radius of influence other than elevation (such as land use), and that the Serp scheme was designed for point verification. However, the team felt that until the NWS moves to a grid-based verification system, the Serp tool is acceptable.
BUF_ModelBlendTool	1.1	John Rozbicki	2003-12-29	The only concern expressed with this tool was that the averaging of two independent fields may yield a meteorologically inconsistent result. However, this is indeed how ensemble means are calculated and it is a known caveat accepted by the scientific community.
Model_Blend	1.0	Timothy Barker	2002-11-24	
Copy_from_Model	1.1	Timothy Barker	2002-01-18	This is the update of MatchMos. Relies on Serp, which may or may not be the best. Can be tricky to set up but

Document: Done

Future Activities

- Complete Phase II and III of National Recommended Smart Tools list

- Develop process to baseline a subset of recommended tools in official GFE software releases

- Explore verification of various Smart Tool and Initialization techniques

Challenges

- How does the STSIT relate to the DSPO?

-Currently report to the ISST and tasked by the DSPO via the ISST

-Suggest more direct link to DSPO

Challenges

FSL IFPS Development Requests